

New Ideas in Test Design for Students Who Persistently Fail

Sue Bechard, PhD

Measured Progress

Christopher Camacho, PhD

Children's Progress



New Methods to Solve Old Problems



GUIDING QUESTION

How can we use educational technology to develop and deliver a fair, accessible, and informational test for students with special needs?

- **Data Analysis**
- **Content Modification**
- **Interactive Design**
- **Initial Field Studies**
- **Development of New Test**
- **Upcoming Pilot Testing**



Data Analysis

Data Analysis



EXAMINATION OF STUDENT RESPONSES

What can we learn from the data that we've collected?

- **Examining Students' Responses**
 - The Target Population - i.e., the 2%
 - General Education
- **Patterns of Responses**
 - Insights
 - Design Guidelines

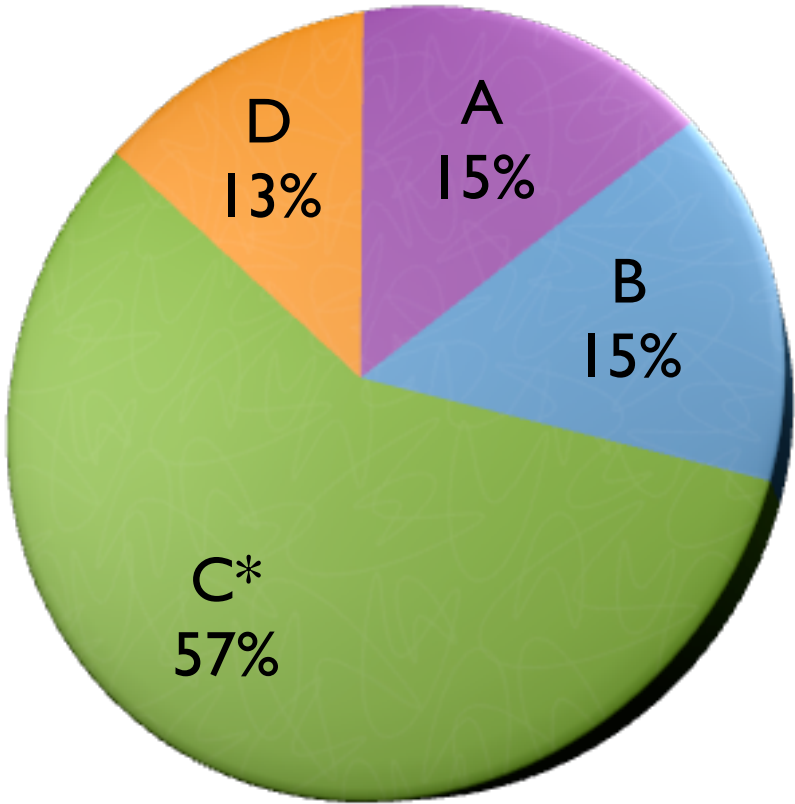
Use the table below to answer the question.

A	B
2	8
4	14
6	20
8	26

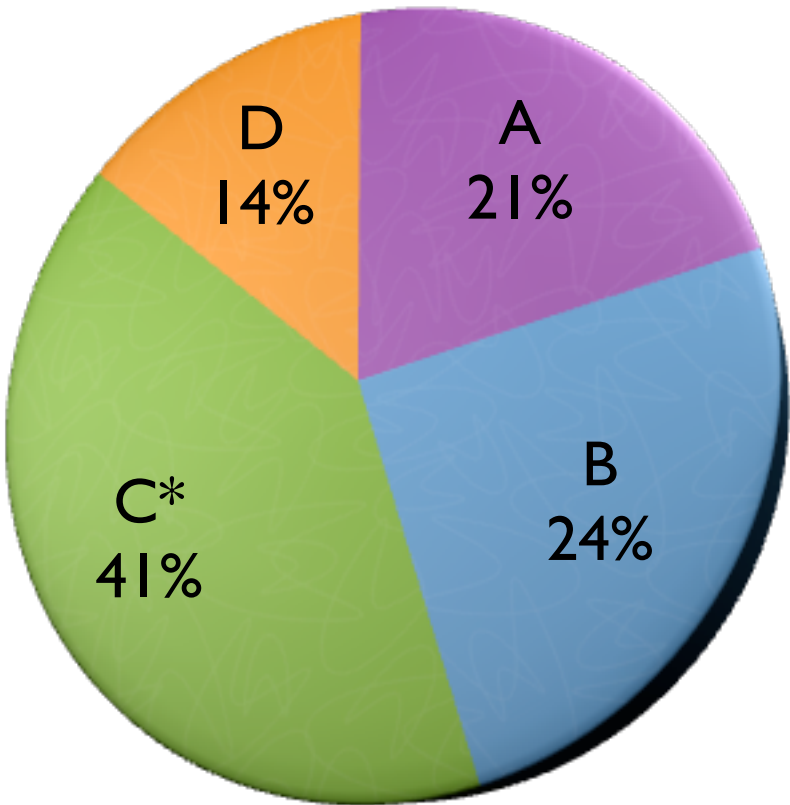
What is the rule for changing the numbers in column A to the numbers in column B?

- A. Add 6.
- B. Multiply by 4.
- C. Multiply by 3 and then add 2.
- D. Multiply by 4 and then subtract 2.

General Population



2% Population



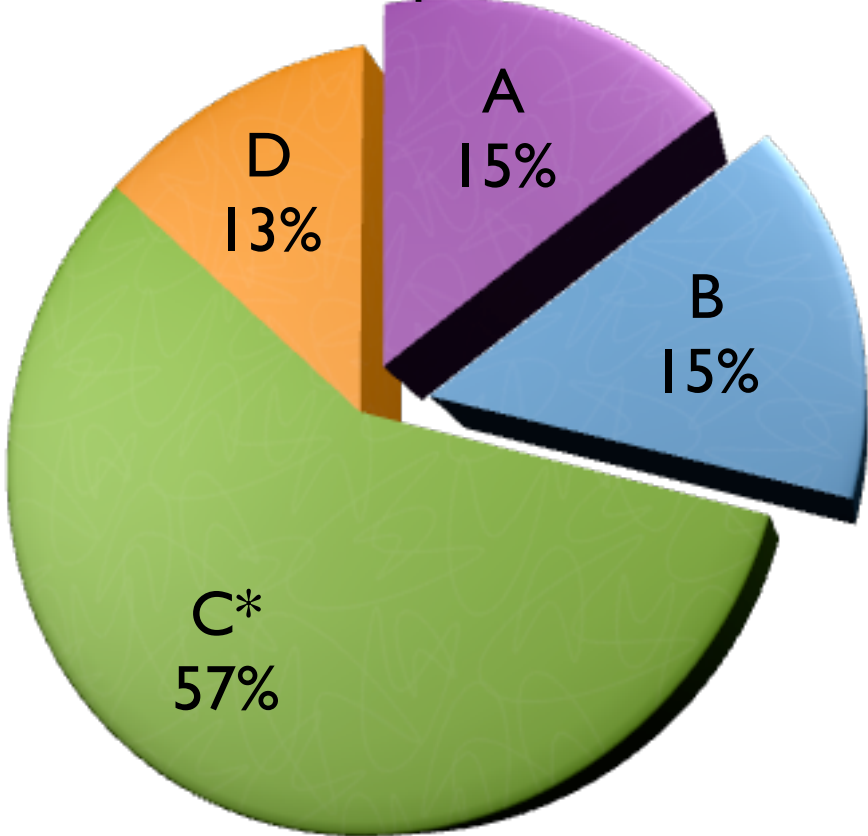
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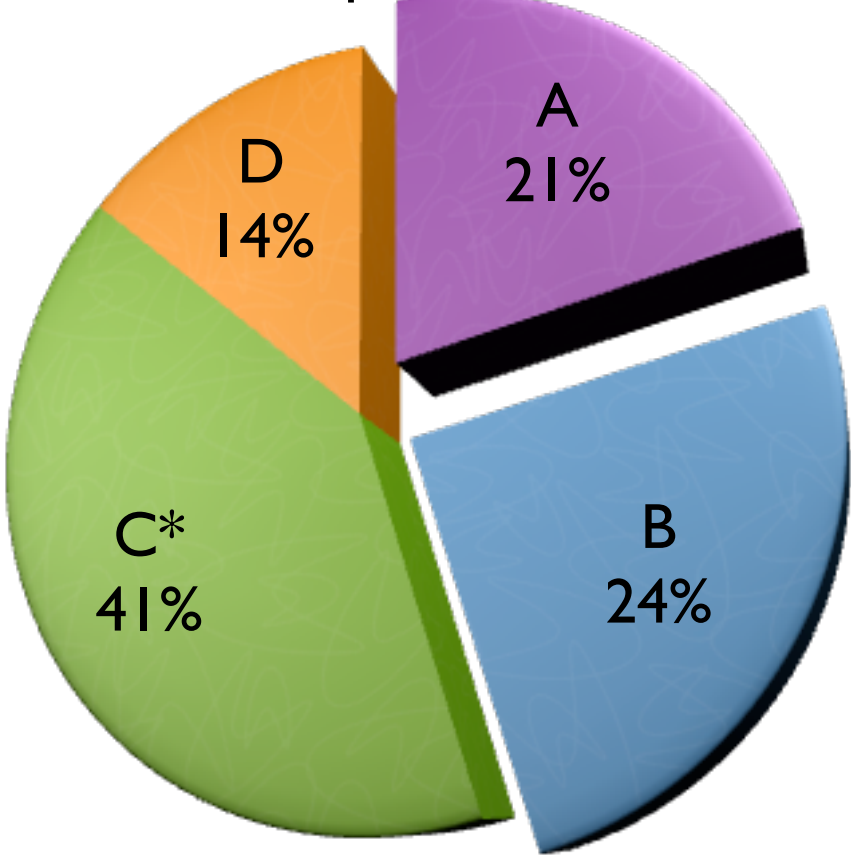
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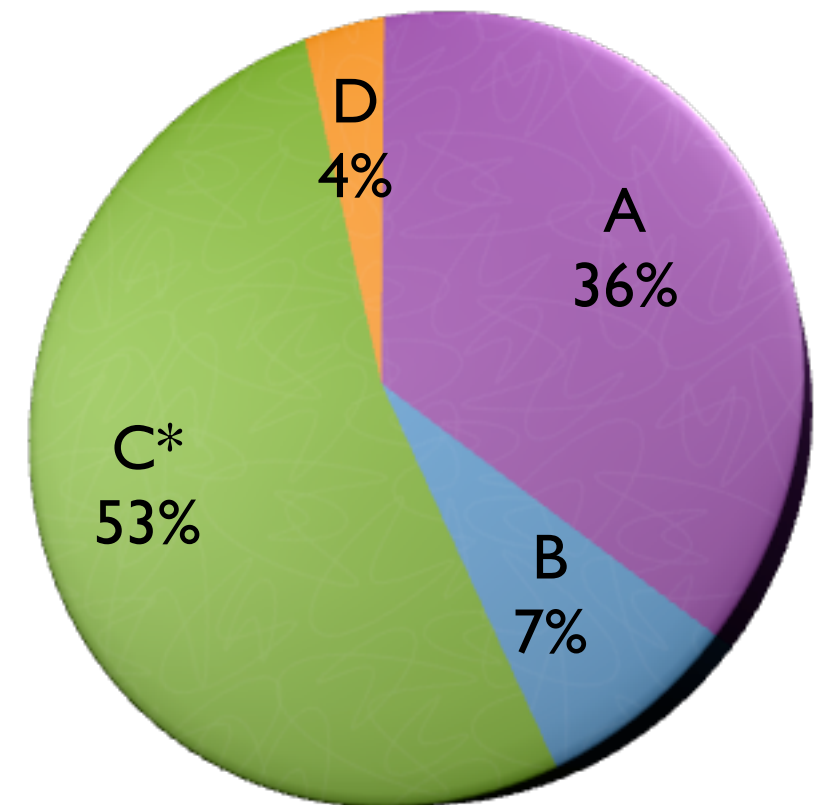
2% Population



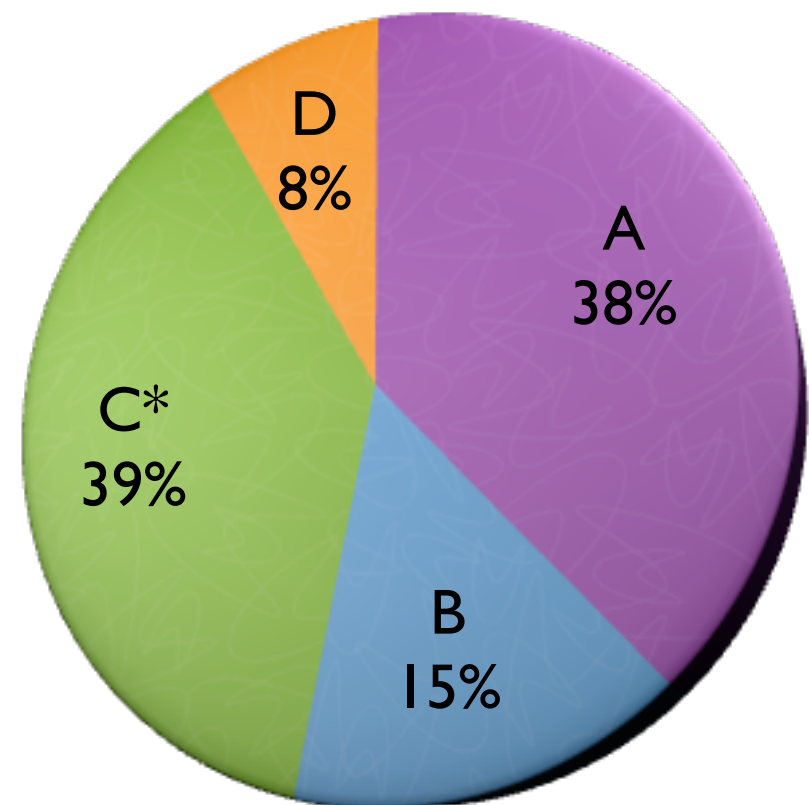
Why does the author most likely begin the passage with a question?

- A. to help define the word “degu.”
- B. to compare degus with other types of animals.
- C. to bring attention to an uncommon pet.
- D. to convince people to own pets.

General Population



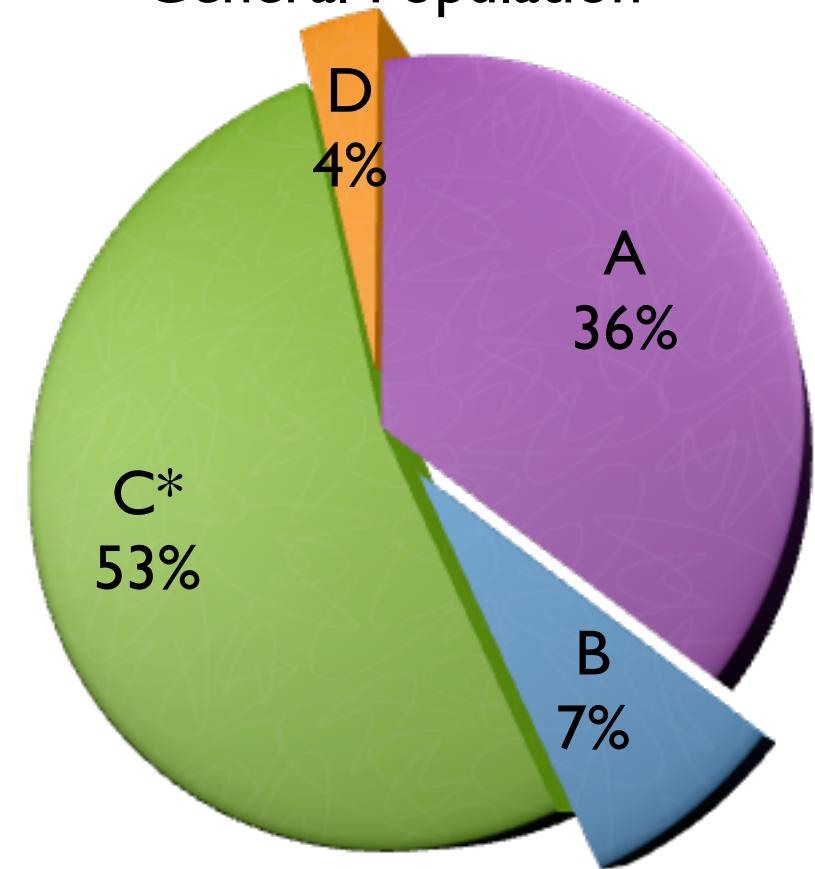
2% Population



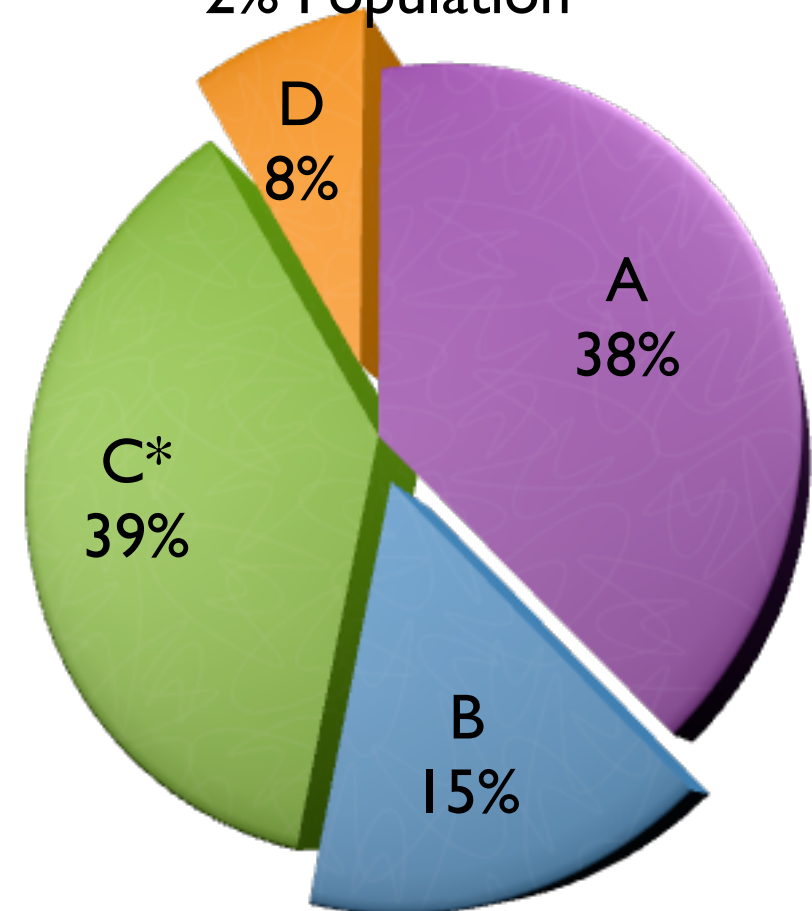
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General Population



2% Population



Data Analysis



EXAMINATION OF STUDENT RESPONSES

What can we learn from the data that we've collected?

- **Modify the Content**
 - Develop scaffolding procedures
 - Deconstruction questions
 - Direct students' attention
- **Use Interactive Design**
 - Insights
 - Design Guidelines



Content Modification

Content Modification



MONTANA TEACHER ADVISORY PANEL

How would a teacher modify the content?

- **Worked With Master Teachers in Math and ELA**
- **Examined Each Question**
 - Developed targeted scaffolding procedures
 - Developed procedures that would mimic a teacher

Content Modification



MONTANA TEACHER ADVISORY PANEL

How would a teacher modify the content?

ELA

All questions read aloud.

Vocabulary words and meaning read aloud.

Text is chunked on a page.

Allow scroll back to any part of the text.

Math

Add bolding, underlining, highlighting.

Add definition for unknown words.

Set up the proportions for the students.

Present a visualization of the problem.



Interactive Design

Interactive Design



A NEW APPROACH FOR A NEW GENERATION

How can we use computer to deliver a better test?

- **Interactive Design**

- Minimize the Learning Curve of a Task
- Reduce Frustration
- Increase Accuracy and Efficiency
- Help Understanding
- Without Diminishing Usefulness

Interactive Design



A NEW APPROACH FOR A NEW GENERATION

How can we use computer to deliver a better test?

- **Interactive Design Features**

Play audio file	Make images appear	Animation
Change images on action	Move images on action	Rollover audio
Feedback on action	Mouse rollover glow	Chunking' text and images

Interactive Design



A NEW APPROACH FOR A NEW GENERATION

How can we use computer to deliver a better test?

- **Interactive Design Questions**

- What are the abilities of the students?
- What are the tasks and goals for the students?
- What are the students' experiences with technology?
- How do the students think the technology should work?

MT GSEG
Grade 7 ELA/Reading
Informational passage
Degu



Initial Field Testing

Initial Field Testing



INITIAL TESTING OF THE ITEMS

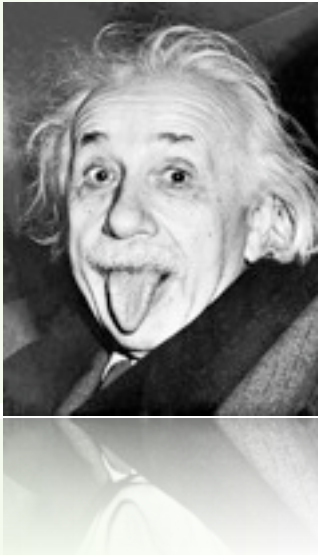
How would the students respond to the computer?

- **21 Student Interview Conducted**
 - Assessments were very challenging.
 - Computer interface worked well.
 - Audio very helpful for the students.
 - Students enjoyed self-pacing.
 - Interactive questions very helpful.



Development of New Test

Development of New Test



INITIAL TESTING OF THE ITEMS

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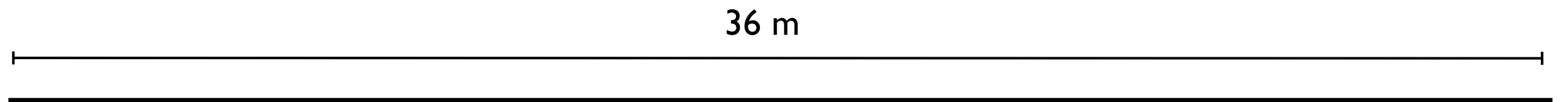
16 toys

17 toys

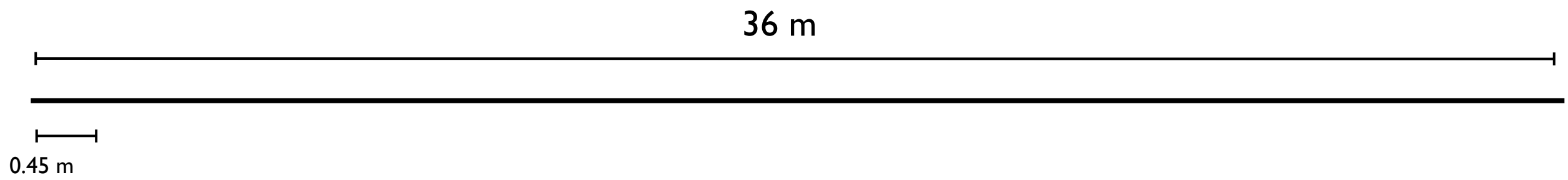
80 toys

81 toys

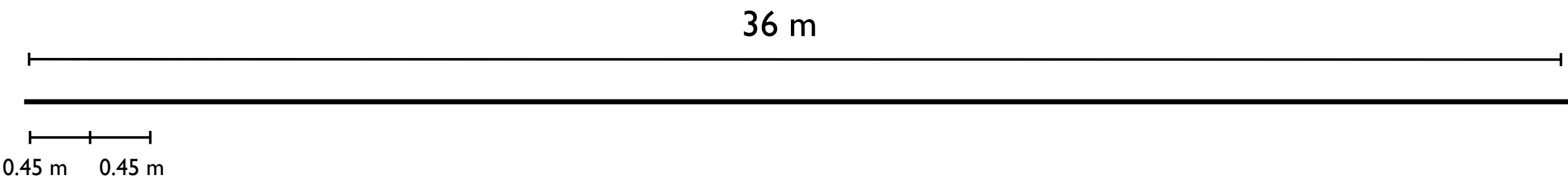
Maria has 36 meters of string.



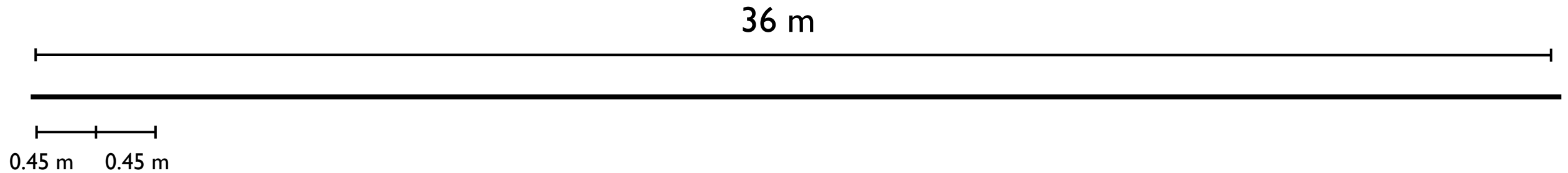
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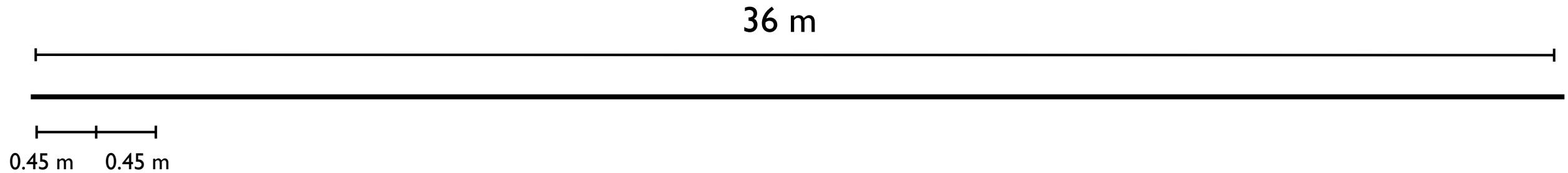


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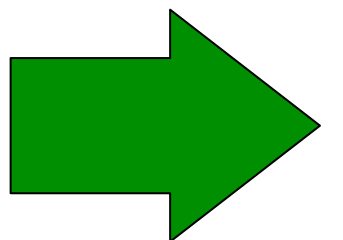
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Degu

Alvin Silverstein

Degus are small, rat-sized rodents. Some people believe degus make wonderful pets! Read this article about degus, and then answer the questions that follow.



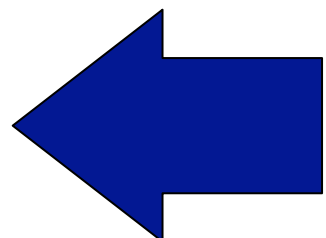
Go Forward

Degu

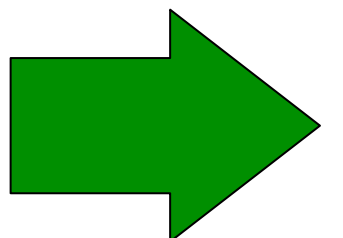
Alvin Silverstein

Here are some things to think about while you read this article:

- Why does the author begin this article by asking a question?
- What is the life like for degus in the wild?
- How does the author organize the information in this article?
- What would make a better title for this article?



Go Back

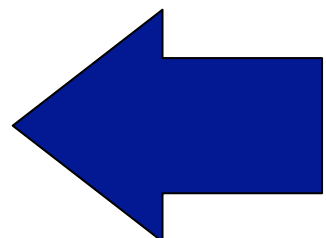


Go Forward

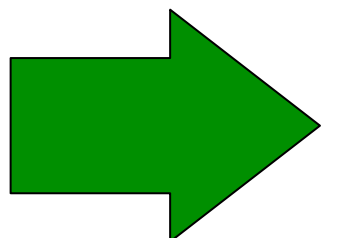
Degu

Alvin Silverstein

DO YOU KNOW WHAT a degu is? If you don't, you're not alone. Most people have never heard of them. Degus have recently been introduced to the pet industry, but many pet stores do not sell them because so little is known about them. People who do keep degus say that they are wonderful pets – interesting, lovable, and fun to play with. Pet owners also say that degus are a great addition to the fast-growing **exotic** pet industry.



Go Back



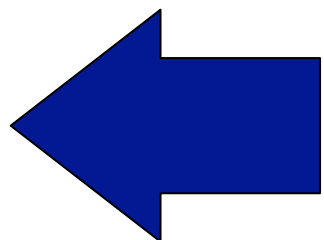
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A DEGU'S LIFE

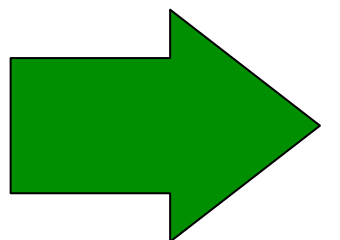
2 Degus are very sociable animals. In the wild, they live in large groups or colonies that may include ten to hundreds of animals. Males will fight to defend their home territories. They dig burrows with very complex, extensive tunnels and several entrances. They collect dirt, twigs, rocks, and other things lying around and pile them up in mounds near the burrow entrances.

Degus have a well-defined social structure within their groups. Each male's social status is based on the size of the mound outside the entrance to his burrow. The high-ranking degus have the highest mounds. If a mound is accidentally destroyed, however, the owner will lose his high-ranking status.

Degus live in very close-knit families. They are very affectionate to one another and may spend some time resting close together and nuzzling each other's fur. The males also help in raising the young.



Go Back

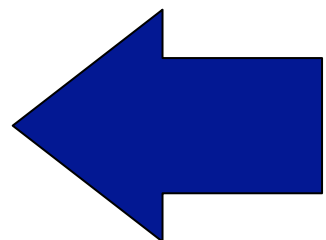


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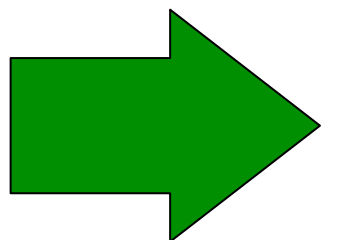
DEGUS AS PETS

Degus love attention and companionship. In fact, most breeders suggest buying at least two degus if pet owners cannot spend enough time with their pet. Degus are not **solitary** animals; a lonely degu may become depressed and ill and may even die. It is best to get degus when they are young. Degus that are raised from a young age and are handled often will be much friendlier than older degus that are not familiar with people.

Degus have good memories. They can recognize sounds and voices. They know their owners and are friendlier to people they know. When degus meet strangers, they will be very cautious. They are not aggressive by nature and will rarely bite a person or another degu, unless they are threatened.



Go Back

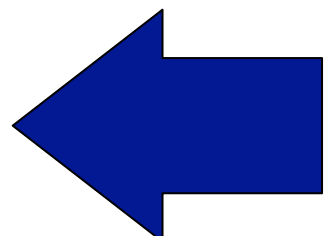


Go Forward

Degus sleep at night and are most active during the early morning and early evening. Degus are very lively animals and like to run and jump and climb. They are curious and love to explore. Of course, as rodents, they tend to chew a lot. So they need a large, escape-proof cage, plenty of exercise, and “safe” things to chew on.

Like [chinchillas](#), degus also need to take dust baths to keep their fur healthy.

In the wild, degus have a life span of up to 15 years. But in captivity, they rarely live more than 10 years. Their lives are often shortened by a poor diet or a lack of exercise or companionship. Degus that are given plenty of love and proper care can bring a lot of enjoyment to pet owners.



Go Back



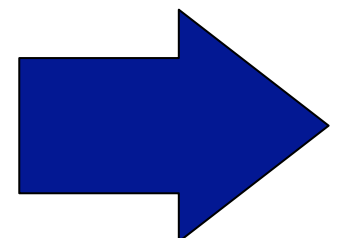
What determines the social status of a male degu?

the size of the entrance to his burrow

the extent to which he can defend his family

the height of the mound outside his burrow

the amount of food he is able to collect

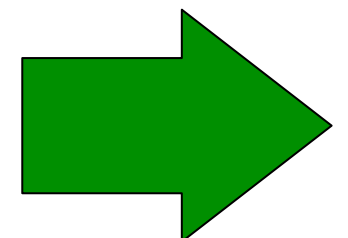


Go To Passage

Degu

Alvin Silverstein

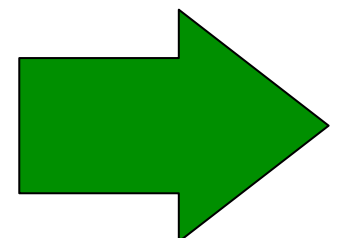
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Go To Question

Let's take a closer look at this part of the passage.
Read this passage one more time.

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Go To Question

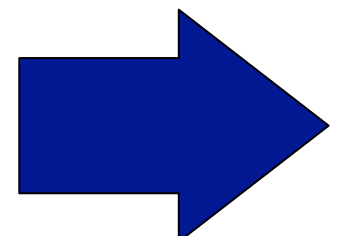
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Go To Passage



Upcoming Pilot Test

Upcoming Pilot Test



LOOKING FOR PILOT SITES

Would you like to be a part of the research?

- **The pilot is as easy as ABC**
 - Let us know you are interested
 - Send us the student name and info
 - Set up a time in computer lab
 - Administer the test items



Children's Progress



Help

Username:

Password:

[Forgot your password?](#)

Login

☐ Remember username

☐ Student will choose name and product

Looking for reports? Find them in **Homerroom**

Version 1.0.7

Welcome back,
Andrew Morrison



Search Student or Group:

Search

Your Class is:

Andrew Morrison

Select a Student

Sort by: Last Name

Edgard Cronin
Gladys Delcampo
Marlo Glacken
Christeen Lipsky
Granville Mespelt
Randal Nonaka
Jeffrey Picklesimer
Matt Romos
Edison Stichter

Select a Product

★ Recommended

View by: ☒ Short List ☐ Complete List

Recommended and Incomplete Products

Status

★ CPSS Vision Screener
★ CPSS Auditory Screener



Advanced
Options



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★ CPSS Vision Screener

Assignment in progress: 10/7/2008 11:3

Assignment in progress: 10/30/2008 9:48

Assignment in progress: 10/30/2008 10:17

Assignment in progress: 10/31/2008 12:14

Assignment in progress: 11/4/2008 18:39

Assignment in progress: 12/23/2008 17:56

Assignment in progress: 12/31/2008 16:39

★ CPSS Auditory Screener

GO

Advanced
Options



start

C

3:07 PM

Student: Gladys Delcampo
Product: CPSS Vision Screener
Time: Unlimited

Gladys Delcampo Is Ready!

Exit

Start

Thank You!

